

US-PAT-NO: 6409645  
DOCUMENT-IDENTIFIER: US 6409645 B1  
TITLE: Roll cover

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Referring still to FIG. 1, the sleeve 50 of polymeric material surrounds the sleeve 40 of compressible material. A number of polymers may be used in sleeve 50, including, for example, thermoplastic and thermosetting polymers such as polypropylene, polyether sulfone, polyetheretherketone, epoxy, polyurethane, polyimide, and cyanate resins, and copolymers, mixtures and blends thereof. The sleeve 50 of polymeric material preferably has a modulus of elasticity ranging from about 200,000 psi to about  $30 \times 10^6$  psi, and a preferred thickness ranging from about 1/8 to about 1 inches. The ratio of the sleeve 50 of polymeric material to the circumference of the core roll 20 preferably ranges from about 0.03 to about 1. The polymers may contain particulate fillers and/or fibers, such as glass, talc or other minerals, or the like.

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US-PAT-NO: 6059095

DOCUMENT-IDENTIFIER: US 6059095 A

TITLE: Conveying roller and a method for  
producing the same

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(3) Alternatively, according to the present invention, it may be possible to use thermosetting elastomer, such as polyester elastomer, polyurethane elastomer, as material for the outer layer 5. In this case of using thermosetting elastomer, after injecting thermosetting elastomer into the second die 7 at a room temperature, the die 7 is heated to melt a surface portion of the inner layer 4 of thermoplastic resin and solidify the thermosetting elastomer.

As the elastomer for the outer layer is used thermoplastic elastomer such as olefin elastomer, styrene elastomer, or polyamide elastomer, or thermosetting elastomer such as polyester elastomer or polyurethane elastomer. These elastomers have a melting temperature substantially identical to that of polypropylene, polystyrene, or polyethylene for the inner layer, thereby ensuring an increased mixing with the thermoplastic resin of the inner layer. Thus, the adhesion between the inner layer and the outer layer is increased.

an outer layer molded on a periphery of the inner layer, the outer layer being made of a thermosetting elastomer having a setting temperature substantially the same as a melting temperature of the thermoplastic resin of

the inner layer and the outer layer being molded onto the inner layer such that an outer peripheral layer of the inner layer is melted by and mixes with an inner peripheral layer of the elastomer of the outer layer to form a mixed boundary region of the inner layer and the outer layer.

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